

Increased work space

Internally welded Stainless steel construction

High resolution

UHV versions for synchrotron beam line

Spectrometer & Spectrograph operation

The 1.0 meter focal length Seya-Namioka uses simple grating rotation to scan wavelengths. An angle of 70° 15' subtends the entrance and exit slit arms. The focal length provides excellent resolution and a lot of work space.

Stainless steel construction makes this design suitable for use with high vacuum and contaminant free experimental chambers or microchannel plate intensified detectors.



In addition to simple grating rotation the traditional Seya-Namioka features fixed entrance and exit slit positions as well as fixed beam direction from the exit slit. When used as a scanning spectrometer these valuable characteristics make the Model 231 suitable for use in applications at synchrotron storage rings.

The Model 231M4 (231 version or revision 4) was designed specifically for synchrotron applications. It offers white light bypass optics as well as diverting optics when the use of the spectrometer is required. Multiple grating turrets are employed to further simplify instrument demands during experiments.

<p>Model 231 part #: 8183-0231-0</p> <p>Focal length: 1,000 mm Included angle: 70° 15' f/number: 22.9 Resolution: ** 0.025 nm* Dispersion:** 0.83 nm/mm Accuracy: 0.1 nm Reproducibility: 0.005 Base vacuum: 10⁻⁷ torr</p> <p>* with 1200 G/mm, measured with 10 um slits x 4 mm high.</p> <p>**Other gratings available, multiply resolution and dispersion values by the difference in groove densities.</p>
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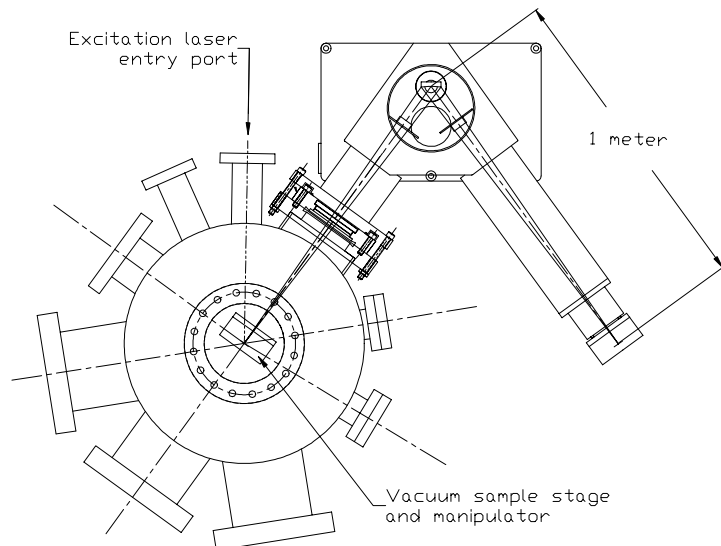
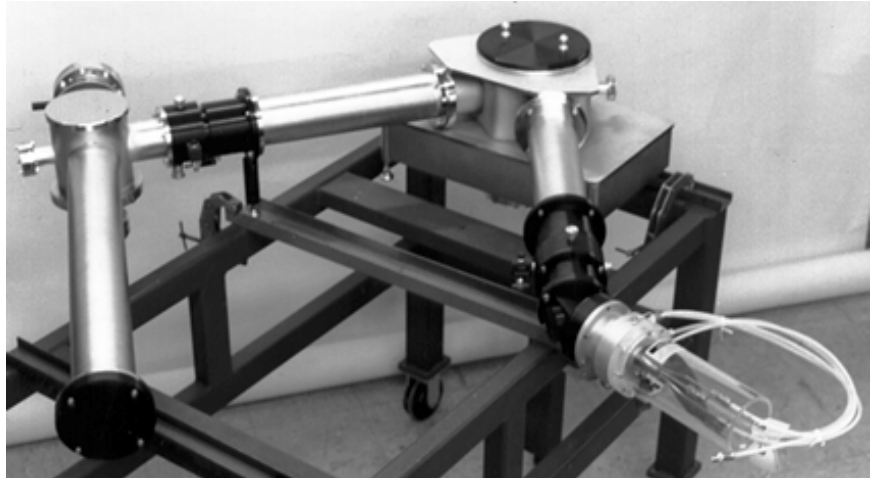


Figure 1. The "reach" of the 231 is sufficient to use a focused laser spot deep inside a vacuum tank as an entrance image. This system depicts the version used at University of Michigans Ultrafast Science Lab (care of D. Umstaeder & X. B. Lu).

Systems can be configured with the high resolution Model 231 for a variety of applications. The system pictured at the right provides a very high resolution (discrete wavelength) collimated beam. The long focal length and subsequent dispersion permits to operate the hollow cathode source, Model 629, at large apertures and maintain spectral purity.



The system depicted consists of:

Hollow cathode source	line spectrum for 304 to 1640 Å (7 - 40 eV)	Model 629
Optimizer (collect & f/no. match)	for wavelengths > 304 Å	Model 615
1.0 meter focal length spectrometer	for < 300 - 5500 Å	Model 231
beam collimating chamber	angle optimized for wavelengths > 500 Å	built to suit

Model 231M4 - for synchrotron applications with detail of the exit slit assembly is pictured below. The detail shows the adjustment points of the selectable spectrometer selection / white light bypass optic.

This UHV design has bilaterally adjustable slits, a multiple (3) grating turret and comes complete with vacuum pumping system suitable for operating at base pressures of 10^{-10} torr.

